

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

SINGULAR COMPUTING LLC,

Plaintiff,

v.

GOOGLE LLC,

Defendant.

Civil Action No.
19-12551-FDS

**MEMORANDUM AND ORDER ON DEFENDANT’S
MOTION FOR FURTHER CLAIM CONSTRUCTION**

SAYLOR, C.J.

This is a patent dispute over computer system architectures. Plaintiff Singular Computing LLC seeks a judgment that the use of certain computer chips by defendant Google LLC that embody a form of chip architecture infringed its patents.

Google has moved for further claim construction on the term “execution unit,” requesting that the court construe the language of Singular’s claims to mean that every unit must be physically distinct from another without sharing any component parts. Singular has responded that Google’s request has been waived as untimely, and even if it has not, it should be rejected.

For the following reasons, the motion will be denied.

I. Background

Singular Computing LLC holds U.S. Patent Nos. 8,407,273 (“the ’273 Patent”), 9,218,156 (“the ’156 Patent”), and 10,416,961 (“the ’961 Patent”), which each describe a method of “Processing with Compact Arithmetic Processing Element[s].” Singular has sued Google for infringing on those patents. As relevant here, the term “execution unit” appears in Claim 53 of

the '273 patent and Claim 7 of the '156 patent. Parties agree that “execution unit” should be understood to also mean “processing element.”

On March 31, 2021, the Court held a *Markman* hearing to determine the construction of several disputed terms in Singular’s claims, including how to construe the phrase “execution unit.” Google proposed a construction of a “low precision and high dynamic range processing element designed to perform arithmetic operations on numerical values,” whereas Singular proposed a “processing element comprising an arithmetic circuit paired with a memory circuit.” (ECF No. 354). The Court adopted Singular’s proposed construction in July 2022. (*Id.*). Following that decision, the Court set a schedule for parties to submit expert reports and depositions, *Daubert* motions, and summary judgment motions.

On October 30, 2023—more than a year after the claim-construction order was issued, and two months before trial—Google moved for additional claim construction on the term “execution unit.” It contends that the Court should construe the term to mean a “*physically distinct* processing element comprising an arithmetic circuit paired with a memory circuit.” Singular has opposed the motion, contending that the motion is untimely and is an impermissible rewriting of its claims.

II. Legal Standard

The construction of claim terms is a question of law, which may in some cases rely on underlying factual determinations. *Teva Pharms. USA Inc. v. Sandoz Inc.*, 547 U.S. 318, 322, 324-27 (2015); *see Markman v. Westview Instruments*, 517 U.S. 370, 372 (1996) (“[T]he construction of a patent, including terms of art within its claim, is exclusively within the province of the court.”).

In *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), the Federal Circuit clarified the proper approach to claim construction and set forth principles for determining the

hierarchy and weight of the definitional sources that give a patent its meaning. The guiding principle of construction is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of . . . the effective filing date of the patent application.” *Id.* at 1313. Courts thus seek clarification of meaning in “the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Id.* at 1314 (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys. Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)).

III. Analysis

A. Waiver

The court has discretion to preclude parties from injecting new claim-construction theories where the court has prescribed specific procedures and a party has failed to adhere to them. *Bettcher Indus. Inc. v. Bunzl USA, Inc.*, 661 F.3d 629, 640-41 (Fed. Cir. 2011); *see also SanDisk Corp. v. Memorex Prods. Inc.*, 415 F.3d 1278, 1292 (Fed. Cir. 2005). Failing to raise claim-construction arguments in a timely manner ordinarily results in waiver. *See Cent. Admixture Pharm. Servs. Inc. v. Advanced Cardiac Sols., P.C.*, 482 F.3d 1347, 1356 (Fed. Cir. 2007) (affirming district court finding that defendant “waived any argument with respect to [a] term by failing to raise it during the claim construction phase”); *Fenner Inv. Ltd. v. Microsoft Corp.*, 632 F. Supp. 2d 627, 638 (E.D. Tex. 2009) (noting that where a proposed construction “is contrary to the claim construction order and was not raised prior to or even following the claim construction hearing it is waived.”); *Apple Inc. v. Samsung Electronics Co. Ltd.*, 2014 WL 252045, at *3-4 (N.D. Cal. Jan. 21, 2014) (“Nor are [courts] obligated to rule on claim construction arguments presented for the first time in summary judgment briefs.”).

Here, the Court ordered the parties to submit their opening claim-construction briefs by

January 8, 2021. Reply briefs were filed on February 8, 2021. After a hearing, the Court issued its memorandum and order on claim construction on July 27, 2022, construing three terms or groups of terms. Google has not filed any motions for reconsideration or for further claim construction until now. It has thus had ample opportunity to challenge or revisit the Court's prior construction before the eve of trial, but has failed to do so.

Accordingly, the Court agrees that to the extent not already raised, Google has waived any contentions that affect the further construction of the term. However, out of an abundance of caution, the Court will address the merits of the motion.

B. "Execution Unit"

The Court has already construed the term "execution unit" as a "processing element comprising an arithmetic circuit paired with a memory circuit." Google contends that the definition is inadequate and should be extended to mean a "'*physically distinct* processing element comprising an arithmetic circuit paired with a memory circuit." That construction, according to Google, would clarify that execution units cannot "overlap" by sharing some of their constituent parts. That limitation is bolstered, Google says, by intrinsic evidence that appears to suggest that no one unit can overlap with any other unit. It also relies on the Court's own determination that an execution must be a physically tangible circuit, not a "virtual" unit.

Singular responds Google's proposed reconstruction is inconsistent with the claim language for a variety of reasons. First, it contends that the ordinary meaning of "unit" does not require that it be physically distinct from every other component but can capture each unit as "functionally individual components within the broader architecture of CPUs or systems on a chip," where some of the chip's resources are shared. (Pl. Opp'n at 7). Second, it asserts that nothing in the claims or specification requires that each unit be "physically distinct," and indeed that both patents in question mention the possibility of "share[d] circuitry." (*Id.* at 8). Third, it

contends that Google’s own technical expert, Dr. Leeser, appeared to agree that the “VFLOAT C2 System” included 61 “LPHDR execution units,” each of which consisted of separate “multipliers” but all of which shared a single memory circuit. (*Id.* at 12-13). Fourth, it alleges that there is no extrinsic evidence supporting Google’s proposed construction. (*Id.* at 13-14).

Google’s proposed construction is unpersuasive. There appears to be no barrier to each separate execution unit overlapping with another because of shared components. Each separate unit (consisting of an arithmetic circuit and a memory circuit) is tangible and countable, as Google’s own expert Dr. Leeser did. Nothing in the intrinsic or extrinsic record appears to run contrary to that interpretation. Both parties supplied several analogies to attempt to explain their proposed constructions, but the best possible understanding of the term appears to be the construction the Court has already employed—that is, that an “execution unit” consists of two circuits paired together. The fact that one of those circuits might also be paired with another does not diminish its pairing with the first, nor does it make any of those circuits less tangible. For example, if Execution Unit 1 consists of circuits A and B, and Execution Unit 2 is composed of circuits A and C, there are two tangible units, not one as Google suggests.

Accordingly, the Court will decline to alter its earlier construction of the term “execution unit” and will continue to construe it as a “processing element comprising an arithmetic circuit paired with a memory circuit.”

IV. Conclusion

For the foregoing reasons, Google motion for further claim construction on the term “execution unit” is DENIED.

So Ordered.

Dated: December 7, 2023

/s/ F. Dennis Saylor IV
F. Dennis Saylor IV
Chief Judge, United States District Court